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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,952	08/10/2001	Tetsuo Endoh	900-397	5574

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EXAMINER

NGUYEN, JOSEPH H

ART UNIT PAPER NUMBER

2815

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/925,952	Applicant(s) ENDOH ET AL.	
	Examiner Joseph Nguyen	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,7-9,11-17,19,29,31-46 and 49-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19,37-39 and 55 is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7-9,11-17,29,31-36,39-46,49-54 and 56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08/10/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5, 7-9, 11-17, 29, 31-36, 39-46, 49-54, 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Burns Jr, et al.

Regarding claim 1, Burns, Jr. et al discloses on figure 10 a semiconductor memory comprising a first conductivity type semiconductor substrate 235; and one or more memory cells comprising an island like semiconductor layer 230, a charge storage layer 265 and a control gate 275, the charge storage layer and the control gate being formed to entirely or partially encircle a sidewall of the island like semiconductor layer, wherein an active region of at least one of said memory cells is electrically insulated from the semiconductor substrate by a second conductivity type impurity diffusion layer 215 formed in the semiconductor substrate or in the island like semiconductor layer and a depletion layer formed at a junction between the second conductivity type impurity diffusion layer 215 and the semiconductor substrate 235 or the island like semiconductor layer 230.

Regarding claims 5, 7-9, 11-17, 29, 31-36, 39-46, 49-54, 56, Burns Jr, et al. discloses on figure 10 all the structures set forth in the claimed invention.

Allowable Subject Matter

Claims 19, 37-38, 55 are allowed.

Response to Arguments

Applicant's arguments filed on 03/31/2004 have been fully considered but they are not persuasive.

With respect to claims 1, 5, 36, 46, applicant argues that in figure 10, Burns does not disclose or suggest electrically insulating the pillar 230 from the substrate 235 by extending a depletion layer as now recited in the claimed invention. However, on page 16 of the amendment filed on 03/31/2004, applicant admitted that a depletion layer formed on the substrate or the semiconductor layer of a PN junction formed between diffusion layer and the substrate or semiconductor layer by a difference between a potential given to diffusion layer and a potential given to the substrate at times of reading and/ or erasing. However, the way this so-called depletion layer is formed is merely the intended use. One skilled in the art would be able to apply different potentials to diffusion layer and the substrate to obtain the depletion layer in the same manner. Therefore, this does not structurally distinguish Burns from the claimed invention. Further, Burns clearly discloses on figure 10 a pn junction between the second conductivity type diffusion layer 215 in the substrate 235. The substrate 235 can be p doped (col. 8, lines 24-26). This implies that there exists a pn junction therein.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (571) 272-1734. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN
May 7, 2004



**JEROME JACKSON
PRIMARY EXAMINER**